



**IN THE SPECIFICATION:**

Please replace the current Abstract with the following new Abstract:

An apparatus for controlling temperature of an exhaust gas sensor can include a temperature estimating device for sequentially estimating the temperature of an active element based on a predetermined element temperature model, which is representative of a temperature change of the active element due to heat transfer between the active element and an exhaust gas held in contact with the active element. A heater control device can control a heater to equalize the temperature of the active element with a predetermined target temperature using an estimated value of the temperature of the active element from the temperature estimating device.